

Subject: INFO-HAMS Digest V89 #902  
To: INFO-HAMS@WSMR-SIMTEL20.ARMY.MIL

INFO-HAMS Digest                      Sun, 19 Nov 89                      Volume 89 : Issue 902

Today's Topics:

                    \* SpaceNews 20Nov89 \*  
                    NASA Prediction Bulletins

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Date: 18 Nov 89 18:56:38 GMT  
From: att!tsdiag!ka2qhd!kd2bd@ucbvax.Berkeley.EDU (John Magliacane)  
Subject: \* SpaceNews 20Nov89 \*

Bulletin ID: SPC91120

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SpaceNews  
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MONDAY NOVEMBER 20, 1989

SpaceNews originates at KD2BD in Wall Township, NJ, and is distributed weekly around the world. It is available for UNLIMITED distribution.

\* SAREX NEWS \*

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Ron Parise, WA4SIR is scheduled to operate a 2-meter packet radio and voice transceiver from the Space Shuttle next year. Launch time for STS-35 is currently set for April 26, 1990 at 05:02 UTC.

The following chart provides a schedule of potential operating windows for crew tended operation, but do not include the much longer periods in which robot packet operations will be available.

Potential Operating Windows for SAREX  
Based on 26-Apr-90 05:02 UTC Launch

Window Open - Close Rev

MET	UTC
(dd/hh:mm)	(at window open)
	(dd-mmm-yy hh:mm)

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-----
00/10:30 - 00/11:00      26-Apr-90 15:32 - 16:02 08
00/19:00 - 00/22:00      27-Apr-90 00:02 - 03:02 13
01/10:15 - 01/12:00      27-Apr-90 15:17 - 17:02 23
01/20:00 - 01/21:15      28-Apr-90 01:02 - 02:17 30
02/08:45 - 02/10:30      28-Apr-90 13:47 - 15:32 38
02/18:30 - 02/20:00      28-Apr-90 23:32 - 01:02 44
03/07:45 - 03/09:30      29-Apr-90 12:47 - 14:32 53
03/17:30 - 03/19:00      29-Apr-90 22:32 - 00:02 59
04/06:45 - 04/08:30      30-Apr-90 11:47 - 13:32 68
04/16:30 - 04/18:00      30-Apr-90 21:32 - 23:02 75
05/05:45 - 05/08:00      01-May-90 10:47 - 13:03 83
05/16:00 - 05/17:30      01-May-90 21:02 - 22:32 90
06/05:45 - 06/08:00      02-May-90 10:47 - 13:02 99
06/16:00 - 06/17:30      02-May-90 21:02 - 22:32 106
07/05:30 - 07/07:00      03-May-90 10:32 - 12:02 115
07/15:00 - 07/16:30      03-May-90 20:02 - 21:32 121
08/04:15 - 08/05:45      04-May-90 09:17 - 10:47 130
09/05:15 - 09/05:45      05-May-90 10:17 - 10:47 146
09/11:45 - 09/13:45      05-May-90 16:47 - 18:47 150
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Note that not all of these windows will have sarex operation in them. These are only possible windows. The US will have very few passes which occur within these windows. On the other hand, Japan, S. America, Australia, and S. Africa will have good coverage.

★ STS-35 NEWS ★

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Astro-1 power-up testing was completed on the morning of 08-Nov-89, and the HDRR functional test was successfully completed. IPS power on retests were made two weeks ago. After testing, the decision was made not to change out the HDRR-TU.

★ NEW ASTRONAUT/HAM! ★

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There is an excellent chance of another "ham-in-space" Space Shuttle mission shortly after Ron's mission in April. Ken Cameron, a Pilot scheduled to fly on STS-37, has recently passed his Amateur Radio license exam, and has been issued the callsign KA5EWP. His success in obtaining a license is a result of the Johnson Space Center Amateur Radio Club's efforts to promote Amateur Radio, especially among its astronauts. NASA Headquarters approval for KA5EWP to operate an Amateur station on STS-37 has been received following submission of a joint ARRL/AMSAT letter. Ken's operations may include an FSTV uplink and SSTV downlink.

★ SHUTTLE NEWS ★

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The launch date for STS-33 and the Space Shuttle DISCOVERY is being evaluated, but will not be any earlier than 22-Nov-89.

★ MIR NEWS ★

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High levels of solar activity caused Mir cosmonauts Alexander Viktorenko and Alexander Serebrov to flee from Mir and take shelter in the Salyut-7 space station. Salyut-7 has higher radiation shielding than does Mir.

These high solar radiation levels were the cause of the IHU upsets on OSCAR-13.

★ GALILEO NEWS ★

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14 November 1989

The first course change maneuver for Galileo was successfully completed on 11-Nov-89. The two day maneuver began on 09-Nov-89 at a distance of 28,200,000 miles from Earth, and consisted of a long series of time pulses of Galileo's 2.2 pound thrusters. A shorter continuous period of firing would have overheated the thrusters.

The total speed change was 38 mph which will move Galileo closer to its target point near Venus, but changes the arrival time to Venus on February 9th by only a few minutes.

During the maneuver, a temperature sensor on one of the thrusters failed. However, in the future the temperature of that thruster can be deduced from nearby thruster readings.

Galileo is now 55,162,000 miles from Earth and traveling at 60,807 mph. After gaining momentum from Venus's gravity, Galileo will return to Earth in December next year, use Earth's gravity to loop out to the asteroid belt, and return back to Earth again two years later for a final gravity push to reach Jupiter in December 1995.

★ FEEDBACK WELCOMED ★

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Feedback regarding SpaceNews can be directed to the author (John) via any of the following paths:

UUCP : ucbvax!rutgers!petsd!tsdiag!ka2qhd!kd2bd  
PACKET : KD2BD @ NN2Z

<<< Stay on course.....Say YES to Morse! >>>

\* SpaceNews \* >> Satellite News You Won't Find Everywhere Else << \* SpaceNews \*

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Date: Sun, 19 Nov 89 04:42:57 EST  
From: tkelso@afit-ab.arpa (TS Kelso)  
Subject: NASA Prediction Bulletins

The most current orbital elements from the NASA Prediction Bulletins are carried on the Celestial RCP/M, (513) 427-0674, and are updated several times weekly. Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space. This week's elements are provided below. The Celestial RCP/M may be accessed 24 hours/day at 300, 1200, or 2400 baud using 8 data bits, 1 stop bit, no parity.

- Current NASA Prediction Bulletins #603 -

Alouette 1

1 00424U 62B-A 1 89317.91443840 .000000490 000000-0 57637-3 0 2426  
2 00424 80.4646 138.2952 0024107 104.8734 255.5121 13.67236368353277

SOLRAD R/B

1 00727U 64001 A 89317.42255927 .000000358 000000-0 30346-3 0 3170  
2 00727 69.9011 136.2783 0016399 267.2813 92.6432 13.93620084313886

Cos 185 R/B

1 03019U 67104 B 89317.50701519 .00016133 000000-0 10910-2 0 4955  
2 03019 64.0627 359.6969 0200567 208.8772 150.1108 14.91718402127330

ATS 3

1 03029U 67111 A 89316.21324956 -.000000074 000000-0 99999-4 0 2656  
2 03029 12.9261 22.9696 0018048 204.4486 155.4581 1.00272677 80627

Cosmos 398

1 04966U 71 16 A 89318.28094547 .00090688 15983-4 56351-3 0 2535  
2 04966 51.5187 43.1778 2433995 113.6394 273.7692 10.70994342568303

Starlette

1 07646U 75010 A 89313.41220473 .000000044 000000-0 000000-0 0 9979  
2 07646 049.8274 305.6635 0206525 185.6199 174.2907 13.82124455745388

LAGEOS

1 08820U 76039 A 89317.63897937 .000000005 000000-0 000000 0 0 9313

2 08820 109.8539 281.2753 0044701 284.0799 75.4516 6.38664160 60170  
 GOES 2  
 1 10061U 77048 A 89314.36420535 -.000000005 00000-0 00000 0 0 3255  
 2 10061 7.5199 66.4493 0008069 171.6147 188.3239 1.00275746 6847  
 GPS-0001  
 1 10684U 78020 A 89318.03603765 .000000009 00000-0 99999-4 0 2749  
 2 10684 63.5202 96.1524 0113222 198.7047 160.9124 2.00558912 71534  
 GPS-0002  
 1 10893U 78 47 A 89317.00327800 -.000000026 00000-0 00000 0 0 590  
 2 10893 64.4687 337.0927 0156402 27.1378 333.7220 2.00552255 84339  
 GOES 3  
 1 10953U 78062 A 89316.40583895 .000000080 00000-0 99999-4 0 7669  
 2 10953 6.3927 69.1044 0007078 237.6426 122.1619 1.00287381 2423  
 SeaSat 1  
 1 10967U 78064 A 89318.05401248 .00002876 00000-0 10497-2 0 1944  
 2 10967 108.0078 236.3829 0002812 253.2778 106.8116 14.35058687595581  
 GPS-0003  
 1 11054U 78093 A 89316.81124658 -.000000026 00000-0 00000 0 0 1170  
 2 11054 64.0123 333.4823 0055077 120.1757 240.4154 2.00563995 81347  
 GPS-0004  
 1 11141U 78112 A 89315.91016921 .000000009 00000-0 00000 0 0 2296  
 2 11141 63.6207 96.1606 0055896 319.3627 40.1982 2.00566928 80028  
 NOAA 6  
 1 11416U 79 57 A 89317.51370376 .00001809 00000-0 77071-3 0 9264  
 2 11416 98.5136 310.3554 0008329 84.4459 275.7718 14.26177074539186  
 GPS-0005  
 1 11690U 80 11 A 89315.04872120 .000000011 00000-0 00000 0 0 8650  
 2 11690 64.0998 98.1570 0109449 203.0010 156.4806 2.00558202 85869  
 Solar Max  
 1 11703U 89319.12824513 0.00669126 15215-2 0 1939  
 2 11703 28.4934 271.8550 0001490 240.7513 119.3707 15.94906306543528  
 GPS-0006  
 1 11783U 80 32 A 89317.36335169 -.000000026 00000-0 00000 0 0 9872  
 2 11783 63.8125 333.0803 0142462 61.0489 300.4154 2.00571121 69993  
 GOES 4  
 1 11964U 80 74 A 89311.97352998 .000000024 00000-0 00000 0 0 1003  
 2 11964 5.8218 73.2495 0119799 75.4792 285.5157 0.99230012 3458  
 GOES 5  
 1 12472U 81049 A 89313.26520775 -.000000246 00000-0 99999-4 0 7705  
 2 12472 2.9100 78.5868 0002290 190.5882 169.4000 1.00255232 30045  
 SME  
 1 12887U 81100 A 89316.07463644 .00040778 00000-0 11775-2 0 3721  
 2 12887 97.6706 347.5558 0003370 86.8821 273.2806 15.35549389447797  
 Meteor 2-08  
 1 13113U 82 25 A 89314.97169383 .000000349 00000-0 30301-3 0 6743  
 2 13113 82.5329 302.0843 0016258 16.4721 343.6987 13.84075029385547  
 Salyut 7  
 1 13138U 82 33 A 89317.81844604 .00039828 00000-0 74127-3 0 8730

2 13138 51.6080 301.4760 0001611 74.0564 286.0579 15.48459147431322  
 Cosmos 1383  
 1 13301U 82 66 A 89312.91922537 .00000185 00000-0 20508-3 0 5179  
 2 13301 82.9280 102.2092 0029145 48.1109 312.2533 13.67765645367565  
 LandSat 4  
 1 13367U 82 72 A 89317.78339859 .00004093 00000-0 91726-3 0 1603  
 2 13367 98.1957 19.1950 0003773 83.8186 276.3475 14.57149960389932  
 Meteor 2-09  
 1 13718U 82116 A 89312.59959215 .00000553 00000-0 28468-3 0 8315  
 2 13718 81.2471 140.2743 0055658 309.4549 50.1700 14.13357239355957  
 IRAS  
 1 13777U 83 4 A 89317.32383283 .00000487 00000-0 36278-3 0 6928  
 2 13777 99.0319 152.3341 0011887 258.1056 101.8776 13.98672545 16769  
 Cosmos 1447  
 1 13916U 83 21 A 89317.64660793 .00000221 00000-0 22324-3 0 6597  
 2 13916 82.9477 171.3890 0039440 21.4429 338.8384 13.73973413333074  
 TDRS 1  
 1 13969U 83 26 B 89317.25865374 -.00000208 00000-0 00000 0 0 8747  
 2 13969 3.9525 67.1345 0004026 191.8772 167.8654 1.00272210 90918  
 GOES 6  
 1 14050U 83 41 A 89314.45964869 .00000110 00000-0 00000 0 0 365  
 2 14050 1.6672 80.9006 0002779 185.9244 174.0121 1.00291703 8079  
 OSCAR 10  
 1 14129U 83 58 B 89314.29319876 -.00000098 00000-0 00000 0 0 4375  
 2 14129 25.9145 234.8642 6026686 91.9516 333.6250 2.05884371 20225  
 GPS-0008  
 1 14189U 83 72 A 89316.95424119 .00000009 00000-0 99999-4 0 6743  
 2 14189 63.2542 94.6716 0140094 215.5025 143.5337 2.00563562 46429  
 Meteor 2-10  
 1 14452U 83109 A 89318.09960415 .00001231 00000-0 52286-3 0 7867  
 2 14452 81.1610 143.2953 0095722 25.1360 335.4431 14.22429923313855  
 LandSat 5  
 1 14780U 84 21 A 89317.26241362 .00010208 00000-0 22683-2 0 9746  
 2 14780 98.1497 16.5033 0003798 121.0100 239.7656 14.57186383303279  
 UOSAT 2  
 1 14781U 84 21 B 89318.20721832 .00004093 00000-0 78246-3 0 5486  
 2 14781 97.9837 12.5611 0011976 206.8997 153.1702 14.64360091304490  
 LDEF  
 1 14898U 89319.27219549 0.00114946 10567-2 0 490  
 2 14898 28.5021 182.7036 0000744 329.9860 30.1604 15.66140378315025  
 GPS-0009  
 1 15039U 84 59 A 89316.51631196 .00000008 00000-0 00000 0 0 7617  
 2 15039 62.9946 93.9271 0015471 243.4714 116.3477 2.00563187 39698  
 Cosmos 1574  
 1 15055U 84 62 A 89314.78073931 .00000210 00000-0 21474-3 0 7991  
 2 15055 82.9555 223.2674 0026300 209.4127 150.5565 13.73290222270090  
 Meteor 2-11  
 1 15099U 84 72 A 89318.20893943 .00000585 00000-0 51917-3 0 9794

2 15099 82.5302 247.0424 0012792 170.7262 189.4140 13.83735567270863  
 GPS-0010  
 1 15271U 84 97 A 89316.91396939 -.000000026 00000-0 00000 0 0 7266  
 2 15271 63.3136 332.7676 0103636 321.9378 37.3775 2.00569802 36818  
 Cosmos 1602  
 1 15331U 84105 A 89317.16164757 .000006458 00000-0 92093-3 0 1144  
 2 15331 82.5402 200.8673 0022781 322.7812 37.1847 14.76473663276199  
 NOAA 9  
 1 15427U 84123 A 89318.27266547 .00001390 00000-0 77565-3 0 4525  
 2 15427 99.1567 308.2879 0014351 251.6729 108.2882 14.12281363253641  
 Meteor 2-12  
 1 15516U 85 13 A 89315.05702682 .000000445 00000-0 38833-3 0 1309  
 2 15516 82.5373 187.9353 0017924 63.3549 296.9448 13.84212462241379  
 Cosmos 1686  
 1 16095U 85 86 A 89316.85038222 .00012105 00000-0 23259-3 0 4128  
 2 16095 51.6083 306.2660 0001697 29.3245 330.9157 15.48366314232272  
 GPS-0011  
 1 16129U 85 93 A 89316.57318419 .000000009 00000-0 00000 0 0 3632  
 2 16129 63.7811 94.7095 0121247 149.8791 210.8003 2.00561708 30014  
 Meteor 3-1  
 1 16191U 85100 A 89314.91927952 .000000044 00000-0 99999-4 0 8740  
 2 16191 82.5430 132.0124 0018864 295.2548 64.6622 13.16881860194830  
 Meteor 2-13  
 1 16408U 85119 A 89317.88330794 .000000328 00000-0 28403-3 0 5464  
 2 16408 82.5322 100.5554 0014849 241.2521 118.7186 13.84238323196269  
 Mir  
 1 16609U 86 17 A 89317.83220633 .00045097 00000-0 62581-3 0 2037  
 2 16609 51.6241 332.6249 0005005 311.8191 48.2420 15.56563224214507  
 SPOT 1  
 1 16613U 86 19 A 89317.88605337 .00001717 00000-0 82439-3 0 6676  
 2 16613 98.7264 30.4633 0001633 100.1090 260.0285 14.20053743 33376  
 Meteor 2-14  
 1 16735U 86 39 A 89314.99140760 .000000182 00000-0 15475-3 0 3360  
 2 16735 82.5374 129.7604 0014280 325.9152 34.1084 13.83987553174761  
 Cosmos 1766  
 1 16881U 86 55 A 89317.84406823 .000006731 00000-0 96613-3 0 7983  
 2 16881 82.5165 259.5512 0021241 337.6763 22.3569 14.76216972177363  
 EGP  
 1 16908U 86 61 A 89304.02055883 -.000000016 00000-0 18794-3 0 1554  
 2 16908 50.0104 240.5066 0010893 330.4310 29.5907 12.44381948146326  
 FO-12  
 1 16909U 86 61 B 89304.07884460 -.000000025 00000-0 99999-4 0 1749  
 2 16909 50.0168 240.6055 0010698 329.6461 30.3754 12.44402062146327  
 NOAA 10  
 1 16969U 86 73 A 89317.06253492 .00001073 00000-0 49061-3 0 3048  
 2 16969 98.6263 344.6515 0013514 174.8923 185.2409 14.23277684163860  
 Meteor 2-15  
 1 17290U 87 1 A 89317.25439597 .000000573 00000-0 50893-3 0 3084

2 17290 82.4680 34.2112 0012107 200.3538 159.7151 13.83799130144231  
 MOS-1  
 1 17527U 87 18 A 89317.87943328 .000000006 00000-0 17327-4 0 3105  
 2 17527 99.1353 27.9506 0000624 73.7260 286.3981 13.94890291139242  
 GOES 7  
 1 17561U 87 22 A 89318.13979794 -.000000056 00000-0 00000 0 0 3699  
 2 17561 0.0997 66.9533 0000231 241.4921 51.5717 1.00207071 3263  
 Kvant  
 1 17845U 87 30 A 89316.80492787 .00073915 00000-0 10202-2 0 9100  
 2 17845 51.6214 337.7718 0005400 322.2484 37.6637 15.56493047150615  
 DMSP B5D2-3  
 1 18123U 87 53 A 89317.92442427 .00001655 00000-0 89525-3 0 4219  
 2 18123 98.8191 146.4099 0013917 276.9840 82.9762 14.13680035123981  
 RS-10/11  
 1 18129U 87 54 A 89317.89604221 .00000948 00000-0 10329-2 0 9397  
 2 18129 82.9223 127.5892 0011970 2.4840 357.6375 13.72027675119927  
 Cosmos 1867  
 1 18187U 87 60 A 89317.91654338 .00001590 00000-0 65638-3 0 79  
 2 18187 65.0128 324.6383 0016411 252.4717 107.4612 14.29453164122521  
 Meteor 2-16  
 1 18312U 87 68 A 89314.93379780 .00000219 00000-0 18868-3 0 3333  
 2 18312 82.5509 103.2721 0012817 140.4114 219.7993 13.83538582112804  
 Meteor 2-17  
 1 18820U 88 5 A 89314.98456999 .00000309 00000-0 26715-3 0 1699  
 2 18820 82.5460 163.9040 0015568 215.9267 144.0862 13.84239929 89996  
 DMSP B5D2-4  
 1 18822U 88 6 A 89317.43049600 .00001522 00000-0 71848-3 0 3240  
 2 18822 98.6722 195.5967 0006748 167.9913 192.1591 14.21054374 92178  
 AO-13  
 1 19216U 89290.09120728 0.00000482 37172+0 0 508  
 2 19216 57.1143 186.3015 6814391 213.3923 73.7401 2.09694922 10298  
 OKEAN 1  
 1 19274U 88 56 A 89317.88522347 .00006511 00000-0 94439-3 0 5594  
 2 19274 82.5183 358.1516 0024180 104.8067 255.5898 14.75720918 73154  
 Meteor 3-2  
 1 19336U 88 64 A 89317.71884001 .00000391 00000-0 99999-3 0 3035  
 2 19336 82.5405 69.8774 0016927 127.3864 232.8670 13.16865990 62593  
 NOAA 11  
 1 19531U 88 89 A 89314.26594329 .00001539 00000-0 87204-3 0 1610  
 2 19531 98.9548 257.7068 0012221 176.8113 183.3146 14.11262041 58083  
 TDRS 2  
 1 19548U 88 91 B 89308.35404435 .00000131 00000-0 99999-4 0 488  
 2 19548 0.0121 134.3737 0002322 92.2857 133.3404 1.00275755 3196  
 Cosmos 2001  
 1 19796U 89 11 A 89317.35735426 -.00001051 00000-0 99999-4 0 2613  
 2 19796 62.8802 121.0184 7195522 319.5455 4.8806 2.00607817 5473  
 GPS-0014  
 1 19802U 89281.68171902 0.00000016 10000-3 0 544



2	19802	55.0882	207.3326	0063992	158.0327	202.2596	2.00559422	4704
Meteor 2-18								
1	19851U	89 18	A	89318.22549489	.00000117	00000-0	99999-4 0	979
2	19851	82.5236	39.7225	0012467	245.4732	114.5143	13.83871360	35835
TDRS 3								
1	19883U	89 21	B	89314.97483781	-.00000234	00000-0	99999-4 0	351
2	19883	0.0297	7.4091	0005563	231.3475	121.3681	1.00270705	1706
GPS-0013								
1	20061U	89 44	A	89316.76781513	-.00000031	00000-0	00000 0 0	365
2	20061	54.6660	24.6273	0083119	169.0552	191.1370	2.00568042	3150
Nadezhda								
1	20103U	89 50	A	89315.00353235	.00000218	00000-0	22192-3 0	479
2	20103	82.9577	85.8279	0036678	287.4290	72.2857	13.73522549	17760
GPS-0015								
1	20185U	89 64	A	89298.79060532	.00000015	00000-0	99999-4 0	212
2	20185	54.9529	207.5354	0025372	139.3926	220.8319	2.00572367	5990
Progress M								
1	20191U	89 66	A	89316.86918078	.00017169	00000-0	24423-3 0	742
2	20191	51.6254	337.4459	0005298	307.8523	52.3344	15.56461936	12768
Soyuz TM-8								
1	20218U	89 71	A	89316.74075728	.00031762	00000-0	44518-3 0	686
2	20218	51.6244	338.0938	0004836	308.2284	51.8860	15.56462731	10592
Cosmos 2038								
1	20232U			89307.06014179	0.00000004		0	234
2	20232	82.5747	135.6619	0010825	276.3117	83.6741	12.65098703	6273
Cosmos 2040								
1	20234U			89307.09151014	0.00000004		0	194
2	20234	82.5882	135.8634	0004530	68.7531	291.4042	12.62285197	6267
Cosmos 2041								
1	20235U			89299.01282557	0.00000004		0	161
2	20235	82.5844	140.8923	0008466	305.5606	54.4700	12.64510000	5263
Cosmos 2042								
1	20236U			89307.10818638	0.00000004		0	190
2	20236	82.5796	135.7400	0004228	272.3400	87.7205	12.63875175	6286
Cosmos 2043								
1	20237U			89292.00979109	0.00000004		0	149
2	20237	82.5780	145.4095	0002358	6.9061	353.2063	12.63091135	4360
1989 074G								
1	20238U			89306.41478462	0.00000004		0	136
2	20238	82.5897	136.7280	0041603	94.7788	265.8049	12.55209541	6150
1989 077A								
1	20253U			89297.82071484	-.00000151		10000-3 0	308
2	20253	4.9623	305.4801	0000923	168.9189	190.8448	1.00282052	290
1989 077B								
1	20254U			89308.19001358	0.00062423	20971-4	18788-2 0	713
2	20254	28.4380	302.8752	7197554	205.0331	88.2559	2.43068192	977
Molniya1-76								
1	20255U			89299.19849953	0.00000322		38808-2 0	377

2	20255	62.8121	171.5444	7355952	288.2454	9.5519	2.00644502	609
1989 078B								
1	20256U			89299.23374591	0.13799275	42989-4	24516-3 0	740
2	20256	62.8052	66.9312	0025738	121.7385	238.1190	16.44993496	4529
1989 078C								
1	20257U			89297.30600474	0.23904803	43496-4	39607-3 0	713
2	20257	62.8096	74.5113	0025323	105.0164	255.8269	16.45472312	4222
1989 078D								
1	20258U			89296.85282225	0.00000291		74449-3 0	167
2	20258	62.7893	171.7169	7312708	288.1735	9.8142	2.06171125	557
Cosmos 2046								
1	20259U			89315.77766119	0.00039250		64555-3 0	1019
2	20259	65.0314	134.0046	0009867	272.0146	87.9628	15.52107000	7007
InterCos 24								
1	20261U			89308.75277529	0.00002087		65514-3 0	1018
2	20261	82.5973	10.9293	1263681	125.3260	247.2505	12.42632663	4708
1989 080C								
1	20262U			89300.05301050	0.00001969		61710-3 0	449
2	20262	82.6012	16.4356	1263811	144.9220	224.2128	12.42664468	3627
Gorizont 19								
1	20263U			89306.38348734	-.00000255		10000-3 0	468
2	20263	1.3488	276.1628	0000941	291.1377	69.4080	1.00270678	362
1989 081D								
1	20266U			89303.29822252	-.00000247		10000-3 0	124
2	20266	1.3838	275.7338	0032692	309.0460	50.2639	1.00602746	348
Cosmos 2047								
1	20279U			89319.17767657	0.00975144	28384-4	43792-3 0	1298
2	20279	67.1062	79.0064	0080531	120.5530	251.0454	16.14086652	6863
Maigon-2								
1	20281U			89318.73477289	0.00003608		11299-2 0	1137
2	20281	82.5956	4.6010	1263881	102.8168	271.6843	12.42767847	5943
1989 084C								
1	20299U			89315.65492079	0.00004493		25787-2 0	261
2	20299	34.2215	137.6630	7091995	16.1773	358.1377	2.49620780	598
GPS-0016								
1	20302U			89317.46981767	-.00000031		10000-3 0	206
2	20302	54.7709	325.8586	0037248	303.8423	55.8092	2.00575420	425
1989 085B								
1	20303U			89318.10208419	0.00008174		10637-2 0	227
2	20303	35.6531	190.4829	0338275	286.3939	69.9892	14.47343457	3439
1989 085C								
1	20304U			89317.15402025	0.00192659	11782-4	19441-2 0	421
2	20304	37.7073	307.2674	6003470	218.7277	77.5651	4.14368230	946
Meteor 3-3								
1	20305U			89318.33922688	0.00000549		14327-2 0	201
2	20305	82.5557	9.5369	0016851	141.7259	218.5067	13.15843976	2699
1989 086B								
1	20306U			89318.33619044	0.00003178		83495-2 0	327

2 20306 82.5591 9.5323 0016105 139.3258 220.8939 13.16059184 2697  
IntelSat 6A

1 20315U 89316.95854608 -.00000221 10000-3 0 151

2 20315 0.1074 51.6964 0014706 212.1412 96.0316 1.00272958 129  
1989 087B

1 20316U 89314.76806624 0.00007814 58742-2 0 141

2 20316 7.0344 190.7575 7263018 190.2740 136.3658 2.27545899 324  
1989 070C

1 20317U 89315.23560177 -.00000168 10000-3 0 68

2 20317 1.6078 288.1741 0235600 229.8294 127.7530 0.98765817 141

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